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Congress Then and Now

IT is 51 years since a Congress of the Association was held in the Midlands, tnough, on another page, the Midland Counties Division lays just claim to having been concerned with other milestones in our history. But 1905 saw the then National Veterinary Association gathered at Buxton, and it is instructive to compare the proceedings then and now.

There were three papers, respectively, "Preventive Inoculation and the Use of Serum," "Sheep Scab and External Ovine Parasites," and "Veterinary Education." The Congress covered three days, and then, as now, included a Presidential address, and an annual banquet. From the leading article of July 29th, 1905, it is not clear how many members of the profession attended. At one of the outings, arranged by the Midland Veterinary Association, "over a hundred happy enthusiasts, in four-in-hands" set off to visit Chatsworth. On the other hand, the official photograph shows only about forty delegates and their ladies. Among the three readers of papers two were unable to be present, so that, as the leader writer observes, "The debate was incomplete by reason of there being no reply to the criticism evoked."

At the banquet one guest of note was Professor M'Fadyean. The then President of The Royal College referred in his speech to "the advent of the electric car (which) had made a difference of thousands of pounds to the profession, and where the downward tendency would stop it was impossible to say." Rather oddly, at it seems now, the Editor of THE RECORD was present only as a guest, and proposed one of the toasts.

There were no women veterinarians in those days. In replying for "The Ladies" (who, presumably could not, with propriety, reply for themselves), Mr. P. J. Howard "did not know who was responsible for a regulation which prevented ladies from becoming members of the College." Having elaborated upon such discrimination he "hoped a clause would be added to the Charter enabling them to hold the diploma." In point of fact women did not enter the profession until some 25 years ago. At first there were two; now there are nearly 400.

Among other similarities between then and now was the tendency of members to make their arrangements at the last moment, or even to arrive unannounced, on the day. William Hunting reproved them severely in a leading article dated July 8th, 1905.

"The social functions," he wrote, "are unusually lavish, and it is hoped that members will not neglect the common courtesy of replying to invitations . . . those who don't reply and yet attend assume an air of injured innocence instead of recognising their own selfish negligence. In Connemara, last year, eight persons joined the excursion on the last day, with the result that the hotel in the Wild West was overcrowded and bedrooms had to be shared between three and sometimes four."

While no such dire consequences are to be expected at Leamington, it appears that there are still members who have not reserved their places for the various excursions or for the banquet. It would lighten the work of the organisers very much if they could receive all bookings in the immediate future.

Perhaps most welcome among all the advances made since the Buxton Congress is the happy relationship between the profession and other bodies. Then, pungent criticism was made of the medical profession, of the Board of Agriculture, of the pharmaceutical industry, and of local authorities. At Leamington representatives of these bodies, and of many others also, will be our honoured guests. The prestige for which our colleagues, 50 years ago, strove so consistently has been achieved, and those of them who are still with us must feel that something indeed has been attempted, and something done.

In spite of the advent of "the electric motor" and the virtual extinction of the horse as a means of transport, the profession is busier, and has far wider interests than ever before. The second Congress in the Midlands in 50 years will illustrate the striking advances made in the whole field of veterinary science and in the standing and reputation of the profession. Everything augurs well for a most successful and enjoyable week. It seems safe to predict that the two host Divisions, and the organisers, will be amply repaid for all their labours.

Favus in Poultry: An Outbreak of *Trichophyton gallinae* Infection

BY

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SINCE Sabouraud's classic description of favus, published in France in 1909, there appear to be few, if any, reports of outbreaks of this disease in Great Britain, despite the fact that almost every text-book on poultry diseases carries a description of the condition. Ainsworth (1954), in a review of fungus diseases in animals, stated that fowl favus due to *Trichophyton gallinae* was apparently common in this country early in the century, but it now occurred very rarely. In a two-year survey of animal mycoses in Britain, Ainsworth & Austwick (1955) examined seven cases of suspected favus but they failed to detect the presence of any dermatophytic or other pathogenic fungus. They suggested, therefore, that there is, in this country, a condition of unknown aetiology which has some clinical resemblance to mild fowl favus.

Since 1949, suspected favus has been encountered on 26 occasions in fowls submitted for routine examination at Weybridge (six in 1949, ten in 1950, three in 1951, four in 1954, and three in 1955); eight of these cases were submitted to Dr. Ainsworth in addition to those included in the survey already referred to. The histories of some of these cases suggested the presence of an infectious disease, but in none of the cases sent to him was Dr. Ainsworth able to confirm the presence of *T. gallinae*. In view of this experience, it is felt that the prominence given to this disease in so many publications is unwarranted and misleading. Nevertheless, favus in poultry does exist; in a footnote to their article (1955) Ainsworth & Austwick refer to the confirmation of a case at Weybridge. This paper is an account of that outbreak.

In July, 1954, a dermatitis of poultry, affecting the unfeathered portion of the head, was reported from a farm in Berkshire. The flock consisted of 390 Rhode Island Red hens folded in 12 arks and managed as one unit. The disease appeared shortly after the purchase of 12 cockerels which were said to be showing a slight scurfy dermatitis of the comb at the time of purchase. A cockerel was placed in each ark, and two months later 40 hens were showing similar lesions. The hens were otherwise healthy, and egg production had not been affected.

The heads of two affected birds were received at the Laboratory and showed multiple small, white lesions covering the comb, wattles, and sides of the face; the affected area suggesting the application of a light dusting of powder to these parts (Fig. 1). Smears made from this material and stained with lacto-phenol cotton blue showed the presence of numerous septate hyphae and arthrospores.

Material from the lesions was rubbed into the scarified combs of three healthy cockerels, and discrete white lesions appeared in the scarified region after seven days. These later became confluent, resulting in the formation of a thin chalk-like crust (Fig. 2); this spread from the comb and wattles to the other unfeathered parts of the head. There appeared to be no systemic effect on the cockerels and the disease remained confined to the head. Spontaneous recovery without treatment occurred between six and seven weeks after artificial infection.

Attempts to transmit the disease by scarification to guinea-pigs and rabbits were unsuccessful although these animals are susceptible to fowl favus according to Sabouraud (1909). Dodge (1935) found that guinea-pigs and rats were susceptible.

Pathology

Sections of infected combs were fixed in formol saline, cut and stained with haematoxylin and eosin and by the periodic acid Schiff technique. By the latter method, numerous spores and hyphae were seen and all were confined to the keratinised layer of the skin (Figs. 3 and 4). There was no underlying tissue reaction.

Cultural Characteristics

For primary isolation nutrient agar incorporating penicillin (20 units per ml.) and streptomycin (40 units per ml.) was used. After two days' incubation at 37° C. pin-head sized white, flat, velvety colonies were noted. After a further three days these grew to 4 to 6 mm. diameter and developed a central button. At 14 days the colonies were of about 1 cm. diameter, covered with pure white down and developing radial grooves. After further incubation, the white downy surface growth was traversed by irregular radial grooves converging to the centre where they formed cerebriform-like convolutions. Old colonies appeared to crack with age, and the circular fluffy growth was divided into sectors by radial folds.

Cultures of *T. gallinae* grown at 37° C. on solid media containing glucose or maltose were described by Sabouraud (1909) as producing a strawberry-pink pigment which later diffused throughout the medium. Dodge (1935), Georg (1952), and Conant *et al* (1954) also recorded the production of a pink pigment varying in intensity from pale rose to deep strawberry-

FIG. 1.—Naturally infected case of favus.

FIG. 3.—Section of comb showing spores and hyphae in keratinised layer. Periodic acid Schiff, x 100.

FIG. 2.—Transmitted case of favus.

FIG. 4.—Periodic acid Schiff, x 320.

red. In our case, numerous cultures of the fungus on Sabouraud's glucose or maltose agar at 30° C. or 37° C. failed to produce any pigment.

Lacto-phenol cotton-blue mounts were prepared from cultures, and microscopical examination revealed thin hyphae with somewhat pyriform microconidia arranged alternately along the hyphae ("en thryse").

The clinical condition was reproduced by rubbing the cultures into the scarified combs of cockerels, but attempts at transmission to guinea-pigs and rabbits were again unsuccessful.

In view of the negative results obtained in attempted transmission to rabbits and guinea-pigs, and the lack of pigment production, there was some doubt as to whether the fungus in question was *T. gallinae* or *T. megnini*. The final identification was carried out by Dr. L. K. Georg who obtained typical cigar-shaped, thin-walled, smooth, multi-septate *T. gallinae* macroconidia by growing the isolate on rice grains.

Conclusions

This outbreak of favus differed in many respects from those described by Sabouraud (1909). The disease ran a milder course and appeared to cause no systemic disturbance in affected birds. It was also non-pathogenic to guinea-pigs and rabbits and cultures failed to produce pigments. That the culture was, in fact, *T. gallinae* was confirmed on morphological grounds and this would appear to be the first recorded outbreak of true favus in this country where the causal fungus has been isolated and its identity established.

However, our investigations into 26 different cases of suspected favus confirm the opinion of Ainsworth & Austwick (1955) that there is a clinically similar condition in poultry which is non-transmissible by scarification and from which it has not been possible to isolate an infectious agent.

Summary

An outbreak of favus, due to *T. gallinae*, in a poultry flock is described. The condition was found to be transmissible to cockerels but not to guinea-pigs or rabbits.

Acknowledgment.—The authors wish to express their thanks to Mr. P. K. C. Austwick for advice and criticism, and to Dr. Lucille K. Georg for final identification of the fungus.

References

AINSWORTH, D. G. (1954). *Vet. Rec.* **66.** 51.
———, & AUSTWICK, P. K. C. (1955). *Ibid.* **67.** 5.
CONANT, N. F., SMITH, D. T., BAKER, R. D., CALLAWAY, M. D., & MARTIN, D. S. (1954). "Manual of Clinical Mycology," W. B. Saunders Company, Philadelphia and London.
DODGE, C. W. (1935). "Medical Mycology," Henry Kimpton, London.
GEORG, L. K. (1952). "Mycologia." XLIX, 4.
SABOURAUD, S. R. (1909). *Rev. Vét. Toulouse.* **10.** 11.

Paralysis of Lower Jaw in a Four-year-old Kerry Blue Bitch

BY

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THE bitch, which had appeared perfectly normal on the previous evening, was noticed on the following morning to be salivating profusely, although bright and lively. On examination the muscles of the lower jaw were found to be in a state of paralysis, the mouth being open about 2 inches. The condition appeared painless—no objection being made to manipulation; sensation was present in the lips. The tongue was unaffected but the animal was unable to lap, and water had to be administered throughout the course of the illness. A loose tape bandage of soft muslin was applied to the muzzle (a clean one being supplied twice daily). This enabled the animal to pick up soft (but not sloppy) food, and considerably reduced salivation. Temperature was normal throughout the illness. Neostigmine methysulphate* 0.5 c.c. amps. × 2 intramuscularly were given at three-day intervals, and after the second injection the gap between the jaws had diminished. Six injections were given in all, and improvement was steady; by the fifth injection the jaws were in apposition. Mastication of hard objects was not attempted for about 10 weeks. Over the following three years the dog was attended for various minor ailments and there was no recurrence.

About 18 months later, the daughter (also a thoroughbred Kerry Blue) and then about three years of age produced a similar set of symptoms. It was decided to try another form of therapy, mainly with a view to seeing whether this condition was self terminating. Accordingly, for two weeks injections of cyanocobalamin† were given every third day, followed by 2 c.c. acetarsonic acid‡ every third day on three occasions. The dog was still bright, and as in the previous case, temperature was normal throughout; some weight was lost, but there was no improvement. Neostigmine methysulphate was now used in the same dose as before and again after two injections improvement was noted; six injections were given. This bitch did not regain her original jaw strength, the owners particularly noticed her grip on a ball was weaker. When I visited her some 18 months later, the original strength of jaw had not been regained.

Enquiries produced no history of trauma and the breeders concerned professed no knowledge of the condition. Three litter-sisters of the daughter were not affected.

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* Prostigmin.

† Cytamen.

‡ Aricyl.

Treatment of Enzootic Pneumonia (Virus Pneumonia) in Pigs with Tetracycline : Failure to Remove the Virus from an Already Established Infection

BY

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THE efficiency of tetracycline and oxytetracycline to prevent the establishment of enzootic pneumonia when administered prophylactically was shown in an earlier report (Lannek & Börnfors, 1956). The influence on the virus of a therapeutic treatment with broad spectrum antibiotics does not seem to have been elicited so far, although it was shown (Penny, 1954 ; Börnfors & Lannek, 1955) that such therapy exerted a beneficial effect on the well-being of the pneumonic pigs.

The experiments to be described aimed to show whether pigs which already harboured an older, spontaneous infection (Experiment 1), or a fresh, experimental infection (Experiment 2), could be rendered non-infective by treatment with tetracycline.

Material and Methods

Experiment 1 concerned 12 pigs with spontaneous pneumonia which were obtained from a large swine farm. These animals were 18 to 20 weeks old and had spent the last two months in a heavily infected herd. They coughed frequently, and X-ray confirmed the presence of moderate pneumonia in them all. They did not show the aspect of "Kümmerer," however, but were rather typical representatives of pigs of their age from large swine herds where pneumonia is prevalent. These pigs were divided into two groups (A and B) with six in each. The groups were kept separated from each other in different but adjoining houses. They were managed by the same warden, who used different clothes and boots for the two groups.

Similar isolation conditions were used throughout these experiments. Our own experience, and observations by others (Betts, Whittlestone & Beveridge, 1955) show that the isolation need not be more rigorous in order to prevent spread of the disease.

All other pigs used in these experiments were collected at the age of six to seven weeks from farms known to be free from pneumonia. On random occasions a newly-arrived pig or two was screened by X-ray but with negative result. So far we have not observed pneumonia develop in any of the pigs collected under these conditions, unless a pig was purposely exposed after the arrival.

To confirm the infectiousness of Groups A and B, five other pigs were brought into the same pen with each of them. These latter groups we shall refer to as Groups C and D (cf. Fig. 1). Groups C and A, and D and B, respectively, were housed together for 10 days. Groups C and D were then removed and taken to different rooms, where they were kept under the isolation conditions described above for 24 days. They were then slaughtered and the lungs were collected for pathologic-anatomical examination.

The treatment with tetracycline was started in Group B one day after Group D was removed. The daily dose was 1·7 g. per pig and corresponded roughly to 35 mg. per kg. bodyweight at the beginning of the treatment and 25 mg. at the end. The daily dose was divided into two equal parts, given morning and afternoon mixed in the food. The treatment was continued for 10 days.

Group A was not treated in any way.

Seven days after the treatment of Group B had finished Groups A and B were again tested by bringing them together with two new groups of pneumonia-free pigs. These groups, termed E and F, were also of five pigs each. The pens of groups A and B were washed thoroughly and disinfected with chloramine before Groups E and F were introduced. Groups A and E, and B and F, respectively, were thus housed together for 10 days. After this the tested Groups A and B were removed, and the test Groups E and F were kept in isolation for 24 days. They were then slaughtered and the lungs were collected for *post-mortem* examination.

Experiment 2 dealt with 10 pigs which were artificially infected (cf. Fig. 2).

A pool of pneumonic lungs (from Groups E and F in Experiment 1), which had been kept at –20° C. for 22 days was ground in a mortar. Physiological saline containing 1,000 I.U. of penicillin and 1,000 γ of streptomycin was added, making a 10 per cent. suspension. This suspension was kept overnight in the ice-box. The supernatant, which was sterile at bacteriological examination, was used for inoculation.

All pigs were inoculated intranasally with 10 c.c. under light trichlorethylene anaesthesia. An X-ray examination 18 days later confirmed that they had all developed pneumonia. The pigs were divided into two groups, G and H, with five pigs in each. The groups were then isolated from each other.

Starting 25 days after the inoculation Groups G and H were treated in different ways for 14 days. The pigs in Group G received one daily intramuscular injection of 150,000 I.U. of penicillin and 0·25 g. of streptomycin during the first week ; during the second week the dose was doubled. The penicillin was in the form of its procaine salt.

The pigs in Group H were given tetracycline twice daily mixed in the food. The daily dose of 1·4 g. per pig corresponded to about 45 mg. per kg. of bodyweight at the beginning of treatment and 35 mg. at the end.

The pigs in Groups G and H were slaughtered two days after the treatment was finished. The lungs were taken for pathologic-anatomical examination.

The pneumonic parts of the lungs of Group H were pooled and a suspension containing penicillin and streptomycin was prepared as described above. The supernatant was used for intranasal inoculation of three pigs (Group J). Each pig received 10 c.c. under trichlorethylene anaesthesia. Another three pigs (Group K) were left uninoculated as controls. Groups J and K were isolated for 19 days. Their lungs were then examined by X-ray.

Results and Discussion

The methods and the results of the experiments are surveyed in Figs. 1 and 2.

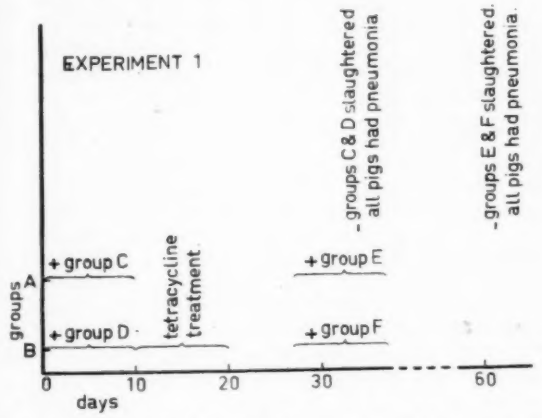

FIG. 1.—This summarises Experiment 1. Day 0 is November 2nd, 1955. Group A + Group C, etc., means that the two groups were kept in the same pen. For further explanations see the text.

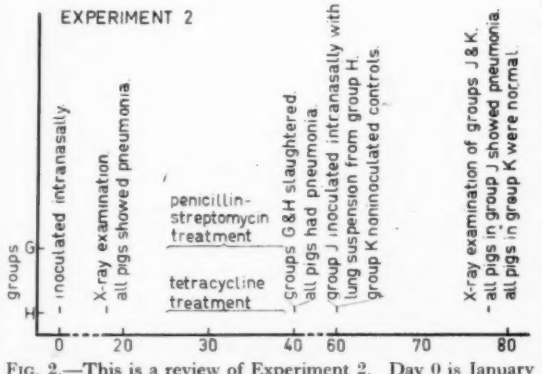

FIG. 2.—This is a review of Experiment 2. Day 0 is January 26th, 1956. For further explanations see the text.

Groups A and B both infected their test Groups C and D before the treatment of Group B with tetracycline was begun. All the pigs in Groups C and D showed pneumonia at slaughter. The result was the same even after the period of tetracycline treatment of Group B. Group A infected its second test Group E giving evidence that this ability had not disappeared spontaneously. The test Group F acquired pneumonia from Group B, proving that the tetracycline treatment of the latter had not rendered the pigs free from virus.

The tetracycline dose was well on therapeutic level and was given for a considerable time. It was thought, however, that the chronic character of the pneumonia in the pigs in Group B might be responsible for the failure of the drug to free the animals from virus. For this reason it was decided to provoke pneumonia in pigs by artificial inoculation of bacteriologically sterile lung suspension and to start the treatment at an early stage of pneumonia development. This suspension was prepared from the lungs of the last groups of Experiment 1 and its ability to provoke pneumonia proved the viral character of the pneumonia examined in that experiment.

It is generally agreed that the virus of enzootic pneumonia is not seriously affected by penicillin or streptomycin. These drugs are thus routinely used to make lung suspension bacteriologically sterile without removing the pneumonia-provoking property. It was therefore decided to treat the inoculated control Group G in Experiment 2 with these drugs. That would inhibit the growth of most bacterial secondary invaders but not the development of virus pneumonia. Thus the lungs of the control animals would offer a more significant comparison with the lungs of the animals treated with tetracycline.

In Experiment 2 (Group H) the treatment with tetracycline was extended to 14 days and the daily doses were high. At slaughter the tetracycline-treated animals, however, all showed pneumonia of a degree which was by no means less than that of the pigs which had been treated with penicillin and streptomycin.

Group J, which was inoculated with a suspension from the lungs of Group H, developed pneumonia; whereas the uninoculated control Group K did not. Thus, even an intensive tetracycline treatment (35 to 45 mg. per kg. bodyweight) during a rather long time (14 days) of a rather fresh pneumonia (treatment begun 25 days after the inoculation) did not free the lungs of the pigs in Group H from viable virus.

This is in agreement with the statement of Betts *et al.* (1955) that antibiotics have no therapeutic action against virus pneumonia.

There is a striking contrast between the efficiency of tetracycline as a prophylactic agent against enzootic pneumonia (Lannek & Börnfors, 1956) and the lack of therapeutic action. At present the authors are not prepared to discuss this fact more closely, but feel inclined to suggest that the intracellular propagation of viruses is one of the key factors of the problem.

Summary

The therapeutic activity of tetracycline in enzootic pneumonia in pigs was examined in two experiments. In the first experiment the treated animals had acquired their pneumonia spontaneously in an infected herd, where they had spent at least two months. In the second experiment the treated pigs had not been exposed until they were inoculated with a suspension of pneumonic lungs 25 days before the treatment started. The initial presence of pneumonia was confirmed by X-ray in both experiments.

(*Concluded on page* 604)

Foetal Infection with Contagious Bovine Pleuro-pneumonia following Subcutaneous Infection of the Dam

BY

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CONTAGIOUS bovine pleuro-pneumonia (C.B.P.P.) is very uncommon in calves, though Seddon (1953) recorded a high incidence of infection among calves in a few outbreaks in New South Wales. Campbell (1938) observed an acute fatal instance of the disease in a calf whose dam had been exposed to infection seven days prior to calving. The dam died 35 days after exposure. The calf became clinically affected at five weeks of age and died 18 days later.

The following observations on a calf, whose dam was vaccinated with a live attenuated vaccine and later "challenged" with virulent material when approaching full-term, suggest the possibility of infection *in utero* due to bacteraemic spread of the causal organism. After vaccination with living cultures such dissemination in the blood-stream may cause the development of typical lesions at a distant site, localisation of the organism and its subsequent proliferation being usually potentiated by a minor traumatic injury at the secondary site. The thoracic viscera are seldom involved in these secondary lesions, whereas polyarthritis is quite common—notably (according to Hayes, 1926) in young animals. Huytra & Marek (1926) reported the occasional presence of characteristic changes in the lungs of foetuses of diseased pregnant animals; and Campbell (1936) recovered the organism from similar foetuses and from the blood and organs of clinical cases of C.B.P.P.

It appears that infection of a calf following experimental subcutaneous infection of the dam has not been reported previously, but the use of in-calf cattle is rare for work of this nature.

Experimental Observations

Case 1

During the periodic repetition of a batch potency assay, an in-calf heifer was vaccinated with egg-adapted (strain T.1) C.B.P.P. vaccine of Batch 83/2. This was shown to be avirulent and of very high antigenic potency. The animal, a high grade zebu-cross, was in good condition. A complement fixation test had demonstrated her freedom from C.B.P.P. prior to vaccination. No local reaction developed and the heifer remained healthy. Thirty-five days later, when near to full-term, her immunity was challenged by the subcutaneous inoculation of 1.0 ml. of strain H.1 hypervirulent "lymph" (formerly strain Ngong 1/54). Due to the prior vaccination only a small transient local reaction measuring 2 by 1 inches appeared at the site of challenge, whereas all of four unvaccinated animals reacted very severely (two died). The heifer developed a complement-fixing serum-antibody titre of 1:10 which disappeared by the 21st day after challenge.

Six days after challenge she calved normally. The calf was well developed at birth and was allowed to remain with its dam until weaned naturally.

At about two months of age the calf lost condition and had a slight cough. Its general condition remained very poor for five months and then deteriorated further. Death occurred at 286 days of age.

Diagnosis.—Autopsy revealed extensive and active lesions of C.B.P.P. The thorax contained a large volume of straw-coloured exudate—the characteristic "lymph" of C.B.P.P. The parenchyma of the left lung was almost completely involved; the visceral pleura was thickened and carried adherent patches of fibrin. In addition to the active lesion an "older" area of involvement, apparently sequestrated, was present at the base of the lung.

Four tubes of horse-serum broth were inoculated with material from the lung. Three showed good growth of *Asterococcus mycoides*. As a final confirmation and to provide proof of infectivity, 5.0 ml. of a suspension of infected lung were inoculated subcutaneously into each of two steers. The steers developed extensive local C.B.P.P. reactions, and complement-fixing serum-antibody was present on the 12th day post inoculation at titres of 1:80 and 1:320 respectively.

Treatment of Enzootic Pneumonia (Virus Pneumonia) in Pigs with Tetracycline: Failure to Remove the Virus from an Already Established Infection.—*Concluded.*

Therapeutic levels of tetracycline were given for 10 and 14 days, respectively. It was found in both experiments that the treatment did not make the pigs non-infective. It was also found in Experiment 2 that the treatment did not reduce the pneumonic lesions in comparison with the control animals, which were treated with penicillin-streptomycin.

The excellent prophylactic activity of tetracycline in enzootic pneumonia is in marked contrast to its lack of therapeutic action.

Acknowledgments.—The authors are grateful to Dr. S. E. Olsson for valuable aid in interpretation of the radiographic pictures.

We are indebted to AB Astra, Södertälje, for providing the tetracycline used in the present work.

References

BETTS, A. O., WHITTLESTONE, P., & BEVERIDGE, W. I. B. (1955). *Vet. Rec.* **67.** 685.

BÖRNFORS, S., & LANNEK, N. (1955). *Nord. Vet. Med.* **7.** 15.

LANNEK, N., & BÖRNFORS, S. (1956). *Vet. Rec.* **68.** 53.

PENNY, R. H. C. (1954). *Ibid.* **66.** 730.

Negative Results

A second heifer (4201), vaccinated with Batch 103/2 at about the third month of gestation, was autopsied at about the seventh month. The lungs of the foetus (4201a) appeared normal; *A. mycoides* was not recovered from them by cultural methods.

A third heifer (4320), vaccinated with Batch 137 on the 74th day prior to calving, reacted to the vaccination but not to challenge. Her calf (4320a) was born after challenge but remained normal—no complement fixing antibody being detectable at 30, 60, 95, and 120 days after birth.

Discussion

The possibilities of direct post-natal infection from the dam and accidental infection from other sources were eliminated on the following grounds: (*i*) the dam was healthy, had never been in contact with C.B.P.P., and both prior to and subsequent to vaccination her serum gave a negative reaction to the complement fixation test; (*ii*) the laboratory is maintained as a quarantine unit and is situated in an area free from C.B.P.P.; (*iii*) local aerosol experiments recommenced only after the calf, which was never near to the aerosol isolation unit, had become very severely affected; (*iv*) experimental subcutaneous inoculation seldom, if ever, produces true pulmonary C.B.P.P. in the inoculated animal, nevertheless, during and after parturition the dam and her calf remained isolated from animals employed on experiments on the disease.

Although the calf became infected *in utero* by haematogenous spread via the placenta, it is impossible to determine whether the attenuated vaccine or the virulent challenge material was responsible. At the present time, strains of *A. mycoides* may be differentiated only on the basis of their relative virulence. However, an indication of the probable source of infection arises on consideration of the avirulence of the particular vaccine batch (which failed to produce either a local or a serological reaction in the dam, and was avirulent at its original assay), whereas the challenge inoculation of the dam caused a small local reaction and a detectable complement fixing antibody titre—an indication of suppressed active infection. Furthermore, the calf lung material, when inoculated into the two steers for diagnosis, produced local and serological reactions considerably greater than would be expected following the inoculation of the vaccine strain (unless, during its semi-quiescent period in the calf, its virulence had been greatly exalted). Finally, vaccination failed to produce infection in either the foetus of heifer 4201 or in the calf of heifer 4320.

The bacteraemic dissemination of *A. mycoides* is well established (Hayes, Huytra & Marek, Seddon and others). Certain phases of the organism are capable of passing all filters but those of very small average pore diameter. Thus, though the factors influencing the permeability of the placenta to virus-like particles are not fully understood, it would seem possible that a significant proportion of the few cases of infection found in early calfhood may well be of a haematogenous and intra-uterine origin—infection of the foetus occurring either via the umbilical cord or by aspiration of infected amniotic fluids.

Although, in the instance cited, it is probable that the disease in the calf was caused by the virulent challenge strain, the possibility of intra-uterine infection resulting from vaccination of cattle in the later stages of pregnancy is worthy of further investigation. An association, during outbreaks of C.B.P.P., between the vaccination of animals near to full-term and an increase in the incidence of calf-hood infection would necessitate consideration of the deferment of vaccination of " in-calvers."

The foregoing observations, together with those of Huytra & Marek (1926) and Campbell (1936), suggest that the use of culture vaccines of only moderate attenuation may be contra-indicated for cattle in the late stages of pregnancy.

Summary

1. Congenital infection of a calf is recorded following experimental subcutaneous infection of the dam with contagious bovine pleuro-pneumonia.

2. The progeny of two other vaccinated heifers failed to show signs of infection.

3. The slight danger which may be inherent in the vaccination of cattle approaching full-term is discussed briefly.

Acknowledgments.—My thanks are due to the Director of Veterinary Services, Kenya, for permission to publish the foregoing observations.

References

CAMPBELL, A. D. (1936). *Bull. Coun. Sci. Ind. Res. Aust.* **97.** 65.
——— (1938). *J. Coun. Sci. Ind. Res. Aust.* **11.** 103.
HAYES, J. W. (1926). *Ann. Rept. Dept. Vet. Ser. Tanganyika*, 1926. 25.
HUYTRA, F., & MAREK, J. (1926). *Spec. Path & Therap. Dis. Dom. An.* 3rd ed., 1926.
SEDDON, H. R. (1953). *Ser. Pubs. (Div. Vet. Hyg.) Commonwealth Aust.* **10.** 391.

UFAW ACTIVITIES

The annual general meeting of the veterinary section of UFAW will be held on September 23rd at 2 p.m. at Knuston Hall, near Wellingborough, Northants. The meeting will be addressed by the President-Elect of the Section, Mr. G. C. Knight, F.R.C.V.S.

The annual Summer School of UFAW will be held at Knuston Hall, from September 22nd to 29th. The programme will include visits to the new School of Veterinary Medicine at Cambridge, an artificial insemination centre, and a research laboratory. There will be lectures and discussions on various subjects relating to the welfare of animals. Inclusive fee for the week: 5 gns. Reduced fee for students: 3 gns. Applications and enquiries should be made to Miss Williams, UFAW, 7a, Lamb's Conduit Passage, London, W.C.1.

Chronic Diffuse Ringworm due to *Microsporum canis* in a Dog, involving Two Claws

BY

AUGUSTA M. YOUNG

Meath Hospital, Dublin

Introduction

PUBLISHED clinical descriptions of ringworm in dogs caused by *Microsporum canis* Bodin are rare in British literature on ringworm in animals, that by Wooldridge (1929) being the most complete. By far the best accounts are those which occur in the French literature on the subject; in particular, those by Suis & Suffran (1908), and that by Sabouraud, Suis & Suffran (1908), which is the most detailed and at the same time the most comprehensive description so far published.

It is generally agreed that the typical fully developed lesion in dogs is a circumscribed, circular squamous plaque which is for the most part depilated or which includes only hair butts. The result of infection may be limited to a single lesion, but multiple discrete lesions are more usual, with a tendency to develop in succession. Lesions which occur close together may overlap so that irregular depilated patches may result. The site of the initial lesion is frequently the head; subsequent lesions may then develop, near the first, on the face, or on the trunk and limbs and even the tail. The size of the lesions varies considerably, but the average size is about 2 to 3 cm. in diameter.

Very little accurate information regarding the duration of *M. canis* ringworm lesions in dogs is available, due in part to their successive appearance which renders observation difficult except under strictly controlled circumstances. According to Sabouraud (1910) the circumscribed depilated stage is reached within a few days of the first date of the initial sign of infection being recorded. The response to infection is a localised exudation of plasma at the skin surface. This, on becoming dry, forms a crust in which the bases of the hairs are embedded. Subsequently, when the crust falls off naturally or is removed by scratching or by some other means, the enclosed hairs are for the most part removed also; a proportion of them being removed entire, while the remainder are broken off at the surface of the skin. The amount of desquamation present varies according to the lesion, being very abundant in some and scarcely perceptible in others.

As regards the length of the period of infection, taking into account the successive development of the lesions, there is again a great lack of accurate information. Sabouraud *et al.* (*loc. cit.*) claim three to four months for severe cases, and the general opinion is that, for the average case, two to three months elapse before complete recovery takes place. Most cases of dog ringworm are treated with one or other of the fungicidal preparations with a view to effecting a cure as quickly as possible, so that it is only under specially controlled circumstances that one can form an accurate estimate of the duration of the period of infection.

From the foregoing brief general review of *M. canis* ringworm in dogs it is clear that, by and large, the infection follows an acute, inflammatory course; chronic cases, which are common among cats (La Touche, personal communication), have not been reported as occurring among dogs. The case about to be described appears, therefore, to be an exception in this and other respects.

Case History

A male Irish Terrier aged one and a half years developed a bare patch on the forehead, which was diagnosed as demodectic mange and treated accordingly. Some months later, the development of ringworm in human contacts led to the suspicion that the dog was infected with ringworm, and this was later confirmed.

Clinical Description

The colour of the dog's hair varied from a cream shade to a deep biscuit colour. There were thick, flat crusts extending from the back of the neck to the root of the tail which were of a greyish colour; the skin on the outer side of the hips was a very dark grey colour and somewhat scaly, the remainder being paler.

There was quite a good growth of long hair through the crusts which, when removed, revealed numerous short hairs underneath. The outer aspects of the thighs were barer and more smooth than the rest. On the barer areas the lesions were clearly circular, but in less depilated areas they were not clearly circumscribed. The infected claws were of a light brown colour in contrast with the other claws, which were much darker.

Appearance under Wood's Light

All infected hairs fluoresced a bright greenish colour; these included all short broken hairs, and even the long hairs glowed half-way up the shaft. The third claw of the left fore-leg glowed brightly on the dorsal aspect as well as along the coronal and inferior borders. The second claw of the left hind leg fluoresced likewise.

As far as I know there has not been a similar case recorded in which a dog's claws were infected.

An investigation carried out in Dublin by Meenan (1951), showed that cats and dogs were a common reservoir of ringworm infection, *M. canis* infections being more prevalent in human beings than the human-type dermatophyte *M. audouini*.

Microscopical Investigation of Hairs

Hairs which fluoresced a green colour in Wood's light were mounted in 10 per cent. caustic potash solution. In all cases the basal portion of the hair shaft (hair root) showed a well-developed spore sheath in which the spores formed a close mosaic and were of the small diameter characteristic of the genus *Microsporum*. Hyphae could also be discerned inside the hair-shaft. Permanent preparations stained by P.A.A. (periodic Acid Schiff reaction stain) confirmed these findings.

Microscopical Investigation of Claw

Claw shavings taken parallel to surface were examined microscopically in 10 per cent. caustic potash solution to confirm the presence of mycelium in one of the claws which was positive to Wood's light. These shavings were found to contain mycelium which was very dense in parts, but here and there a parallel arrangement of the main hyphae was observable, such as that recorded by La Touche (1955) in cat claws infected by *M. canis*, and also some patches of spores in mosaic formation.

Culture

Cultures obtained from short lengths of infected hair on standard Sabouraud media and on honey-peptone agar (honey, 5 per cent.) were typical of *M. canis* as regards their macroscopic and microscopic features except that yellow pigment was absent.

Conclusion

It is interesting to note that this dog apparently contracted ringworm in December, 1953. In January, 1954, after human contacts developed ringworm, the dog was examined under Wood's light, the hairs were examined microscopically, and by culture in all cases with a positive result.

In July, 1955, there was scarcely any part of the dog which was not heavily infected, in spite of vigorous treatment with fungicidal preparations and baths, having been conscientiously carried out by the owner.

As all efforts failed to bring about improvement the dog was destroyed in July, 1955.

Acknowledgments.—I would like to express my gratitude to Dr. C. J. La Touche of Leeds University, not only for his assistance with cultural methods and photographs of cultures, but also in preparing the paper. Also to my colleague, Dr. D. M. Mitchell, of the Adelaide Hospital, Dublin.

References

LA TOUCHE, C. J. (1955). *Vet. Rec.* **67**. 578–9.
MEENAN, F. O. C. (1951). *Irish J. Med. Sci.* 546–9.
SABOURAUD, R., SUIS, A., & SUFFRAN, F. (1908). *Ann. de Dermatol. et Syphil.* **9**. *4e. sie.* 321–48.
SUIS, A., & SUFRAN, F. (1908). *Ibid.* 151–2.
WOOLDRIDGE, G. H. (1929). Ringworm in two dogs, transmitted to Human Beings. *Vet. J.* **85**. 306–7.

An Attempt to Treat Scrapie in the Sheep with Massive Doses of Vitamin B_{12}

BY

G. N. HENDERSON

The Distillers Company (Biochemicals) Limited, London, W.1.

Introduction

SCRAPIE in sheep is a problem which has attracted the attention of research workers for very many years, and despite persistent and painstaking work, it has not yet been possible to find any means of controlling scrapie once it is established in an animal. Work with the vitamin B_{12} in the human subject has shown that cases of pernicious anaemia benefit from vitamin B_{12} administration (Chalmers, 1950; Ungley, 1949; Mills & Hemsted, 1949). It has also been reported that cases of sub-acute combined degeneration of the spinal cord, often associated with advanced cases of pernicious anaemia, also show improvement when vitamin B_{12} is administered (Chalmers, 1950; Ungley & Campbell, 1951). Whether this improvement is caused by arresting the degenerative process and permitting adaptation of the locomotor mechanism to bring other muscle systems into play, or frank improvement of the degenerative process by actual healing of demyelinated nerve fibres, is not clearly understood. On the basis of these observations, however, and in view of the present state of knowledge concerning treatment of scrapie, it was felt worth while to investigate, under practical conditions, whether massive doses of vitamin B_{12} by injection would have any beneficial effect upon cases of scrapie. It is appreciated, of course, that the analogy between the degenerative changes in scrapie and those in pernicious anaemia in the human subject is extremely tenuous, since scrapie involves vacuolation of the nerve cell and the degeneration of pernicious anaemia affects principally the myelin sheath of the nerve fibres in the spinal cord. Additionally, scrapie is a condition dependent upon the invasion of tissue by a transmissible neurotrophic virus (Greig, 1950; Wilson, 1952), whereas pernicious anaemia is essentially a deficiency due to the lack of the intrinsic factor necessary for the absorption of vitamin B_{12}.

Materials and Methods

From a flock of Suffolk black-face sheep a group was brought down from the grazing, and from this group six were selected as being in an advanced state of debility. Of these six sheep, four were three and a half years old and two were two and a half years old. Four of these were showing definite signs of scrapie, with bare patches extending from the tail along the line of the spinal cord with definite irritation over this area. They also showed hyperexcitability and the characteristic "hackney-trot" movement with the head held high. Two of the animals appeared to be emaciated and debilitated merely as a result of lambing. On May 19th, treatment of all six sheep was started, each animal receiving 1,000 micro-

grammes of vitamin B_{12} by intramuscular injection. The dose was contained in 1 c.c. of diluent.

From the outset it was planned to administer 1,000 microgrammes to each animal daily for 14 days, followed by 1,000 microgrammes three times a week for 28 days, terminating with 200 microgrammes once a week for 56 days. On May 24th one of the more advanced cases died. On June 2nd the daily injection was substituted by injection three times a week, and on June 17th another scrapie sheep died. From June 30th the dose was reduced to 200 microgrammes once a week. On July 20th a third scrapie sheep died, followed by another on July 29th. Injection was discontinued on August 18th.

Thus of the six animals involved in the trial, only those two which had shown a less-advanced state of debility were still alive at the end of the trial. Of these two, one was in a very advanced state of emaciation and debility, and would certainly have died within 14 days. It was accordingly destroyed. This sheep was, in fact, one of the two where scrapie was thought not to be present, but during the course of the trial it had advanced to a stage which indicated that it was certainly affected. The surviving animal, which was not in very good condition, at least remained alive throughout the course of the trial and showed no deterioration throughout the 14 weeks. It may be assumed, therefore, that it did not, in fact, have a scrapie infection.

Conclusion

It is obvious from the results of this work that the treatment of scrapie with massive doses of vitamin B_{12} shows no appreciable benefit, and despite the high level used and the extended period of the administration, it cannot be regarded as having prolonged the life of any of the affected animals. No improvement in appetite was seen in the affected sheep during the course of the trial to indicate that vitamin B_{12} increased their desire to eat. It is possible that the sixth animal, which survived the trial, might have died without treatment, and in this respect the vitamin injection may have encouraged it to maintain itself and allow it to recover from the effect of lambing. This report is given merely to place on record the work done in order to prevent repetition of this comparatively expensive and apparently fruitless line of research.

Summary

An account is given of an attempt to treat scrapie in sheep with massive doses of vitamin B_{12} by intramuscular injection. All the severely affected sheep died during the course of the experiment and it is therefore deduced that the vitamin has no effect upon the course of the disease and may be considered an unsatisfactory method of control.

Acknowledgments.—The author would like to thank the Directors of the Distillers Company (Biochemicals), Ltd., for permission to publish this article and for supplies of " Distivit " vitamin B_{12} used in this work.

Impressions of Racing and Breeding Horses in Russia

BY

GEORGE S. FORBES

The following extracts are from an article published in Horse and Hound, *and are reprinted by courtesy of the editor of that journal and the author.*

DURING a recent visit I was privileged to meet all those concerned with Moscow Hippodrome and was greatly impressed by their efficiency and love of their work. In this hippodrome there are about 800 horses and all are stabled in barns, similar to the American system. These large barns are well ventilated, with nice roomy loose-boxes, all facing into a central passage. They are cool in the summer and also strongly constructed to withstand the bad weather in the winter months.

Each trainer has about 50 horses in his care and one groom looks after four horses.

Seven veterinary surgeons are employed at Moscow Hippodrome and they are entirely responsible for the health and soundness of the horses. To assist them there is the most modern veterinary hospital, with every type of equipment that is required. For instance, there were two X-ray units—one small and mobile for penetration of the cannon bones, hoof, etc. —the other a powerful unit for penetration of the thorax or other dense portions of the body, a short-wave unit for diathermy, with also many electrical devices for massage and faradism, on which they are very keen.

The operating theatre was equipped with a table on which the horse could be strapped in a standing position and then placed on his side and manoeuvred into any position which the surgeon might desire. These tables are, of course, in operation in our veterinary colleges and the Equine Research Station, but in Russia they are in every hippodrome and stud farm throughout the entire country. In fact all the X-rays and other specialised equipment I have mentioned are available at all centres of horse breeding and racing, and even horse shows.

The keynote of the whole horse industry is hygiene and efficiency. For instance, one evening 180 fresh horses arrived from stud farms and these horses were immediately placed in strict isolation in a special stable, situated about 1 mile from the main stables, with its own veterinary surgeon in charge and with separate grooms and a veterinary hospital, so that in no way could they come into contact with the main body of horses in training.

Many of these horses had come from stud farms in the South and had been 14 days on the train. After

References

CHALMERS, J. N. M. (1950). *Lancet.* **1.** 354.
GREIG, J. R. (1950). *J. Comp. Path.* **60.** 263.
MILLS, J., & HEMSTED, E. H. (1949). *Lancet.* **2.** 1151.
UNGLEY, C. C. (1949). *Brit. Med. J.* **2.** 1,370-7.
———, & CAMPBELL, H. (1951). *Ibid.* **1.** 152-7.
WAGNER, A. R., GOLDSTEIN, H. E., DORAN, J. E., & MAY, J. R. (1954). *J. Amer. vet. Med. Ass.* 136-50.
WILSON, O. R. (1952). *Vet. Rec.* **64.** 468.

their 21 days' quarantine they would join the main training stables.

The shoeing was also of the highest order, there being specialised schools set up for the training of farriers, and particular attention has to be paid to the shoeing of horses during the winter when they race on snow.

I visited a stud farm situated about 40 miles south-west of Moscow. This farm was known as Horse Farm No. 1, being a small establishment with only 300 mares with foals at foot, and one stallion. It was therefore described as a farm. If it had been one of their larger establishments, containing 3,000 mares, it would have been described as a horse factory.

As there were only 300 mares, one stallion could easily manage this amount because artificial insemination is practised, thereby conserving the energy of the stallion so that the semen from one service can be collected and suitably diluted to ensure that a number of mares can be covered and got into foal from one ejaculation.

Horse semen, unlike semen from bulls and rams, cannot be kept for years, in fact only for a very short time; but in Russia they have managed to conserve it now in storage, under favourable conditions, for two months.

The mares, unweaned foals, and yearlings, were fine specimens—well developed, with good bone and feet—and I did not see one foal or yearling with poor bone. They were all straight movers and sound. In fact they would soon have been culled if they had not been right in all respects regarding conformation.

These farms are vast agricultural organisations, running to many thousands of acres, and growing all their own food-stuffs for the horses, as well as the many head of cattle kept on the farm. In fact, this farm being close to Moscow had a large herd of milking cows—the grazing for the horses being alternated with the cows'.

The situation was ideal, and I observed about 200 mares and unweaned foals grazing on one vast plain, attended day and night by two mounted horsemen whose sole duty was to keep the herd together and prevent them wandering too far afield. This plain was bounded on three sides by wooded mountains and on the fourth side by the Moscow river, which at that point was only waist deep.

I saw the whole herd come down to the water to drink and then roll and lie on a large sandbank, stretching themselves out in the sun. This was a sight never to be forgotten.

The veterinary surgeon attached to this farm, as usual, had an up-to-date hospital and practised modern methods of rectal examination prior to insemination, whereby the exact time and date of planting the semen could be determined with accuracy.

They naturally do not believe in planting semen by haphazard methods, and choose the right time by palpating the ovaries and assessing when the follicle is ripe for rupturing. All mares are then examined *per rectum* on the 35th day for pregnancy.

The stallion at this stud farm had a 96 per cent. fertility.

Current Literature

BOOK REVIEWS

The Hides and Skins Industry in Europe. A Study on Raw Hides and Skins, the Tanning Industry, and the Footwear Industry. Prepared by the Hides and Skins Committee, December 1955. O.E.E.C. 2, Rue André-Pascal, Paris, 16e.

This report deals more particularly with the situation in the year 1954. It is divided into three parts which deal respectively with raw hides and skins, the tanning industry, and the footwear industry.

Europe requires considerably more hides and skins than it produces, and, in spite of the developments of alternative materials, there is a constant need to augment supplies from outside sources.

It is stressed that a large proportion of the imported hides and skins are spoiled by disease which existed in the living animal. In this connexion, prominence is given to the depredations of the warble-fly and the inadequate measures at present available for its control.

The factors which influence the supply of leather goods are discussed from the economic point of view. This is of less interest to most of our readers than to those who work in Africa and similar countries, where the efforts of the veterinary services in stimulating the production of marketable commodities of animal origin, such as hides and skins, have played such a marked part in the native economy.

The Zoonoses in their Relationship to Rural Health. by Karl F. Mayer. 49 pp. University of California Press, Berkeley, California. 1955 Price $1.00.

This informative booklet, first prepared as a paper, was originally read in the course of the technical discussions of the Seventh General Assembly, World Health Organisation, in May, 1954.

It reviews the salient features of the more important diseases of animals to which man may be susceptible. They are dealt with under the headings of " major zoonoses " and " zoonoses of localised importance." These are followed by suggestions for the organisation necessary to control these diseases on a national, regional, and local basis. Finally there follows a dissertation on the importance of the inclusion of the veterinary profession in the public health service, which should be read with interest by all who are interested in human health.

Details of the training which the author considers necessary in the veterinary public health worker are elaborated. Mention is made of the academic degree, Master of Public Health, which is available in the U.S.A. to veterinarians and others specialising in preventive state medicine.

The author considers that, owing to the lack of sufficient qualified veterinary surgeons, there is need for veterinary public health auxiliary workers. These, he suggests, might be specially-trained sanitarians or persons trained, in veterinary public health, to meet local needs.

The booklet contains many really excellent detailed diagrams which, one would like to suggest, might

prove valuable to lecturers in epidemiology and related subjects.

Although the author's objective is to show the importance of controlling the "zoonoses" in the interest of human health in rural areas, the work has a far wider scope of interest, since all mankind—whether country or town dwellers—are potential victims of many of the diseases of animals dealt with.

Symposium on Medicated Feeds. (1956). Interscience Publishers, Inc., New York and London. Price $4.

This records the proceedings of a Meeting held in January 1956 on the very important subject of medicated feeds, sponsored by the U.S. Department of Health, Education and Welfare, Food and Drug Administration, Veterinary Medical Branch.

The papers, which have been edited by Drs. Henry Welch and F. Marti-Ibanez, cover a very wide field indeed and, together with the references at the end of each section, provide a very sound basis for study. The papers deal with hormone supplementation of rations in the different animals, the use of antibiotics, arsenicals and anthelmintics, with a special reference to the control of coccidiosis and blackhead. The legal responsibility of manufacturers, the significance from a public health point of view and future trends, are also discussed at some length.

However, as things are moving so rapidly, it is more likely that this publication, excellent though it is, will find a place in a public library rather than on the shelves of a private individual.

ABSTRACTS

Treatment of Tetanus with d-Tubocurarine Chloride. BOOTH, N. H., & PIERSON, R. E. (1956). *J. Amer. Vet. Med. Assoc.* **128.** 257-61.

The use of curare as a muscle relaxant was simplified by the isolation of the pure standardised alkaloid d-tubocurarine having a consistent and dependable effect. The authors used initial intramuscular doses of 270 to 360 units d-tubocurarine in peanut oil on three successive days in the treatment of clinical tetanus in a four-year-old mare, supported for the next nine days by a very slow intravenous aqueous solution of the same alkaloid until reaching the point where general muscular relaxation of the patient resulted (37 units per 100 lb.). Although severe tetanic spasms occurred on the sixth day and momentary paralysis on the 10th, it is stated that steady improvement was maintained, and that by the 13th day a satisfactory recovery had been effected.

The report is noteworthy for its 78 references to tetanus in animals and man. J. P.

The Cause and Pathogenicity of Initial Infections with *Dictyocaulus viviparus*, the Lungworm of Cattle. RUBIN, R., & LUCKER, J. T. (1956). *Am. J. vet. Sci.* **17.** 217-26.

Twenty calves and two yearlings were each given between 5,000 and 750,000 infective *Dictyocaulus viviparus* larvae, either in single or divided doses. All 22 developed a clinical infestation, but neither the rapidity of onset nor the severity of the symptoms was proportionate to the number of larvae given.

Nine animals died. These included all seven animals which had received 30,000 or more larvae in a single dose. The lungs and regional lymph nodes of six of these were examined bacteriologically, but the only significant finding was the isolation of *Pasteurella multocida* from the lungs of a yearling heifer that had died after a prolonged, atypical illness. Only two deaths occurred among the thirteen animals which had received fewer than 30,000 larvae. *Past. multocida* was isolated from the lungs in both cases, and was thought to be a possible cause of death.

Histological examination of the fatal cases showed that interstitial and subpleural emphysema were constant findings, but that the degree of pneumonic involvement varied. No evidence of a "cuffing pneumonia" was seen.

It was estimated that a single infected calf can excrete as many as 33,000,000 larvae. E.A.G.

Satisfactory General Anaesthesia in Birds. GONDAL, C. P. (1956). *J. Amer. Vet. Med. Assoc.* **128.** 332-4.

Ether may be used as an anaesthetic for brief operations on birds. During induction, and after anaesthesia is attained, the bird must be allowed brief periods of access to air to prevent over concentration of ether in the air-sac system and consequently respiratory failure. Pentobarbitone sodium administered via the wing vein produces satisfactory anaesthesia but its margin of safety is very small. There are also mechanical difficulties associated with intravenous injection in small pet birds. Restraint in an unnatural position may cause fatal shock, while bone injury and vein damage are not unusual as a result of struggling.

Each 500 c.c. of "Equithesin" contains 21.3 grammes chloral hydrate, 4.8 grammes pentobarbital, and 10.6 grammes magnesium sulphate in an aqueous solution of propylene glycol and 9.5 per cent. alcohol. A dose of 2.5 c.c. of "Equithesin" per kilo bodyweight is injected deep into the breast muscle. In small birds a tuberculin syringe and 25 gauge needle are recommended for the injection. The bird is released into a small confined area constructed so as to avoid injury. The induction time, duration and depth of anaesthesia vary with the individual. (Experimentally, nine canaries of .018 to .026 kg. were given .05 to .07 c.c. "Equithesin," which produced anaesthesia in 15 to 20 minutes, lasting 35 to 50 minutes.) Recovery is allowed in the induction chamber. There is no sign of sloughing at the injection site. In shocked patients the dose is reduced to 2.2 or 2 c.c. per kilo. To prolong anaesthesia an additional 25 per cent. of the original dose is given, 45 to 60 minutes after induction.

No mortality was recorded in 122 birds of various species anaesthetised for therapeutic or experimental purpose. Procedures performed ranged from the surgical repair of fractures to the "delivery" of egg-bound birds. A dose of 3 c.c. per kilo gave a mortality of 8 (19.5 per cent.) out of 49 birds, which gives some idea of the safety level. L. C. V.

News and Comment

FOOT-AND-MOUTH DISEASE

The area described in the schedule below is declared to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease:—

IN THE COUNTY OF GLOUCESTER: the Borough of Tewkesbury.

In the Petty Sessional Division of Cheltenham: the parishes of Gotherington, Bishop's Cleeve, Woodmancote, Swindon, Uckington, Southam, Prestbury and Charlton Kings.

In the Petty Sessional Division of Northleach: the parish of Whittington and so much of the parish of Sevenhampton as lies to the west of the road running from Charlton Abbots via Sevenhampton to Andoversford including the said road.

In the Petty Sessional Division of Tewkesbury: the parishes of Chaceley, Forthampton, Twyning, Ashchurch, Walton Cardiff, Stoke Orchard, Elmstone Hardwicke, Oxenton, and Teddington.

In the Petty Sessional Division of Winchcomb: the parishes of Dumbleton, Toddington, Alderton, Prescott, Winchcombe, Buckland, Stanton, Stanway and Sudeley, and so much of the parish of Temple Guiting as lies to the south and west of the road running from Stanway via Kineton and Barton to Naunton including the said road.

In the Petty Sessional Division of Newent: the parishes of Staunton, Redmarley D'Abitot, and Pauntley.

IN THE COUNTY OF WORCESTER: the Borough of Evesham; the petty sessional division of Upton-on-Severn.

In the Petty Sessional Division of Evesham: the parishes of Hinton-on-the-Green, Aston Somerville, Sedgeberrow, Ashton-under-Hill, Beckford, Conderton, Overbury, and Kemerton.

In the Petty Sessional Division of Malvern: the parishes of Guarlford, Malvern Wells, and Little Malvern.

In the Petty Sessional Division of Pershore: the parishes of Pirton, Pershore, Wyre Piddle, Hill and Moor, Fladbury, Wick, Besford, Defford, Birlingham, Great Comberton, Little Comberton, Bricklehampton, Cropthorne, Charlton, Netherton, Elmley Castle, Eckington, Bredon's Norton, and Bredon.

The area described below will cease to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease on September 15th, 1956:—

IN THE COUNTY OF DENBIGH: the boroughs of Denbigh and Ruthin.

In the Petty Sessional Division of Isaled: the parishes of Llanrhaiadr yn Cinmerch, Trefnant, Cefn, Llannefydd, Llansannan, Bylchau, Nantglyn and Llandyrnog, and so much of the parish of Aberwheeler Rural as lies to the south of the main road (A.541) running from Trefnant to Mold including the said road.

In the Petty Sessional Division of Ruthin: the parishes of Llangynhafal, Llanynys Rural, Llanbedr, Llanferres, and Llanarmon.

IN THE COUNTY OF FLINT

In the Petty Sessional Division of Holywell and Caerwys: the parishes of Bodfari and Nannerch and so much of the parishes of Caerwys and Ysceifiog as lies to the south of the main road (A.541) running from Trefnant to Mold including the said road.

In the Petty Sessional Division of Mold: the parishes of Mold Urban, Nercwys and Cilcain, and so much of the parish of Mold Rural as lies to the south and west of the main road (A.541) running from Tardd-y-dwr to Mold and to the west of the road running from Mold via Broomfield Hall and Pistyll to Tryddyn including the said roads.

The area described in the First Schedule set out below will cease to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease on September 11th, 1956, and the area described in the Second Schedule will cease to be an Infected Area on September 12th, 1956:—

FIRST SCHEDULE

An area comprising:—

The City and County Borough of Cardiff.

IN THE COUNTY OF GLAMORGAN

In the Petty Sessional Division of Caerphilly Lower: the parish of Llanfedw.

In the Petty Sessional Division of Dinas Powis: the parishes of Leckwith and Penarth.

In the Petty Sessional Division of Kibbor: the parishes of Lisvane and Llanedeyrn.

IN THE COUNTY OF MONMOUTH

In the Petty Sessional Division of Newport: the parishes of Michaelstone-y-Vedw, Coedkernew, Marshfield, St. Mellons, Peterstone Wentlloog and St. Bride's Wentlloog.

SECOND SCHEDULE

An area comprising:—

IN THE COUNTY OF DERBY

In the Petty Sessional Division of Alfreton: the parishes of Pilsley, Morton, Tibshelf, Shirland and Higham, Blackwell, South Normanton, Pinxton, Wessington, and South Wingfield.

In the Petty Sessional Division of Belper: the parishes of Alderwasley and Crich.

In the Petty Sessional Division of Chesterfield: the parish of Ault Hucknall.

IN THE COUNTY OF NOTTINGHAM: the borough of Mansfield.

In the Petty Sessional Division of Mansfield: the parishes of Sutton-in-Ashfield and Kirkby-in-Ashfield.

In the Petty Sessional Division of Nottingham: so much of the parish of Newstead as lies to the west of the road running from Mansfield via Gibbetdale Wood to Papplewick excluding the said road.

CONGRESS PAPERS

The Congress programme, the handbook containing agenda, etc., for the Annual General Meeting, together with some papers to be presented at Congress were dispatched to members of the Association on August 30th. The remainder of the Congress papers are circulated with this issue of THE RECORD.

PERSONAL

Births

WYLLIE.—On August 19th, 1956, to Audrey (*née* Sutherland, M.R.C.V.S.), wife of Donald Wyllie, 29, Garrard Road, Banstead, Surrey, a daughter, Alison Joan, a sister for Gillian and Patricia.

COMING EVENTS

September

12th (Wed.). Meeting of the North Wales Division, B.V.A., at Leahurst Veterinary Field Station, 11.30 a.m.

16th to 22nd (Sun. to Sat.), 74th B.V.A. Annual Congress at Royal Leamington Spa.

17th (Mon.). Meeting of the Catholic Veterinary Group at St. Peter's Church, Dormer Place, Leamington Spa, for mass at 8 a.m.

19th (Wed.). Meeting of the Veterinary Christian Fellowship at Arlington House, 3, Arlington Avenue, Leamington Spa, 4.30 p.m.

27th (Thurs.). Meeting of the Lakeland Division, B.V.A., at the George Hotel, Penrith, 6 p.m.

October

6th (Sat.). Joint Meeting of the Nutrition Society and The Laboratory Animals' Bureau at Guy's Hospital Medical School, St. Thomas Street, London, S.E.1, 10.40 a.m.

12th (Fri.). Meeting of the Welsh Branch, B.V.A., at Aberystwyth.

16th (Tues.). Joint Meeting of the Essex Division, B.V.A., with the Essex Branch of the N.F.U. at the Essex Institute of Agriculture, Writtle, Nr. Chelmsford, Essex, 7.30 p.m.

November

22nd and 23rd (Thurs. and Fri.). B.V.A. Conference on Supplements and Additives in Animal Feeding-stuffs at the Victoria Halls, Bloomsbury Square, London, W.C.1.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Leics. Manor Farm, Isley Walton, Castle Donington (Aug. 27).

Somerset. Middleleigh Farm, Street (Aug. 30).

Staffs. Park Lane Farm, Knypersley, Biddulph, Stoke-on-Trent (Aug. 28); Newchapel Farm, Newchapel, Tunstall, Stoke-on-Trent (Aug. 30).

Foot-and-Mouth Disease

Derby. Railway Fields, Swarkestone (Aug. 27); Brook Farm, Repton (Aug. 31).

Glos. The Hollums, Tewkesbury (Aug. 30).

Fowl Pest

Lancs. Horsemans Farm, Heskin, Chorley; The Bungalow, Moss Lane, Little Hoole, Preston; Lodge Farm, Staining, Blackpool; Moss Rose Piggeries, Dickers Lane, Marton; 97, Blackpool Road, Carleton, and 111, Blackpool Road, Carleton (Aug. 28); Blackgate Lane, Tarleton, Preston; Gill Farm, Gill Lane, Longton; 101, Blackpool Road, Carleton (Aug. 29); 20, Fleetwood Road, Carleton; 134, Blackgate Lane, Tarleton, Preston; 87, Blackpool Road, Carleton; 81, Wood Avenue, Heskin, Chorley (Aug. 30).

Swine Fever

Bucks. Warren Farm, Chalfont St. Peter, Gerrards Cross (Aug. 28); Watergate Farm, Iver Heath, Iver (Aug. 29).

Devon. Bridgend, Sidmouth (Aug. 30); South View, Rosemary Lane, Clayhidon, Cullompton (Sept. 3).

Essex. Marsh Farm, Alresford, Colchester; Suffolk House, Ashwells Road, Pilgrims Hatch, Brentwood (Aug. 29); Brookmans Farm, Stock, Ingatestone; Hardings Farm, Mill Green, Ingatestone (Sept. 3).

Hereford. Lower House Farm, Hampton Bishop, Tupsley (Sept. 3).

Lancs. Glebe Smallholding, Newchurch-in-Pendle, Nelson (Aug. 28); Greenfield Farm, Goosnargh; Lower Daub Hall Farm, Chipping, Preston (Aug. 29); Hillcrest Farm, Chipping, Preston (Sept. 3).

Notts. Emerys Road Allotment Gardens, Netherfield (Aug. 29).

Staffs. Pillaton Farm, Pillaton, Penkridge (Sept. 3).

Surrey. The Piggeries, Occasional Road, Mitcham (Aug. 29); Anglesey, White Lane, Ash (Sept. 3).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

Telephone Charges and Automatic Exchanges

Sir,—Mr. Blackwell draws attention to one aspect of the Transfer of Calls Service offered by the Post Office. May I draw attention to another point? Those of us who are served by fully automatic exchanges are unable to arrange for the simple transfer of calls; we must either give adequate notice of the required transfer, which will not be carried out for a period of less than 24 hours, or we must avail ourselves of a permanent Transfer of Calls system, for which the charge is £8 8s od. per annum. Many of us use this latter service, as do many doctors, and I would have no complaint to make about the cost if the service were adequate. The method of operation of this system is, as I understand it, by the use of a piece of apparatus at the exchange by which, where the transfer system is in action, calls for the number concerned are intercepted and routed to the exchange, the operator then answering and referring the caller to the number which is receiving the calls.

Several of us have had complaints by clients that they have been unable to get a reply from our numbers during periods when we have asked for the transfer of calls. The reason for this seems to be the failure of operators to answer the call at the exchange within a reasonable time, the caller naturally being unaware that his call is through to the exchange, and assuming that the telephone at the surgery is unattended.

On two recent occasions I have tried to obtain the operator at each of two exchanges; on the first

occasion I received no reply at all after ringing for 13 minutes (and it needed a call to the Area Manager's Office to enquire if a major disaster had overtaken "X" exchange to set the wires humming!); on the second I was answered after seven minutes.

The worst periods are Sunday afternoons and any evening, the very times when we require this service most. Consequences in veterinary practice could be serious but it must be even worse for doctors, whose terms of service require the telephone to be manned at all times.

May we know if other members are having this trouble, and if so perhaps the B.V.A. could arrange to take this up with the Postmaster-general.

Yours faithfully,
JOAN JOSHUA.

78, Brentway,
Finchley, N.3.
September 2nd, 1956.

Medical Diagnostic Aids and the Veterinarian

Sir,—Mr. Garner suggests that the clinicians at the colleges are at fault in failing to make use of the biochemistry laboratories. This may be so, but is there any point in seeking assistance from those who can offer so little help? During a recent investigation of a case I had occasion to telephone the physiology department of one of our schools. I wanted to know the normal range of plasma amylase, plasma lipase, and urinary diastase. The department was most helpful, but finally informed me that the information was not known and that I was "on my own."

A few weeks later a member of the clinical department at the same school assured me that he had some difficulty in having tests carried out by the biochemists since this "upset their routine."

It is disturbing to learn that chemical methods, so valuable in human medicine, are not yet being fully exploited as an aid to diagnosis. It is to be hoped that this neglect will be quickly remedied.

Yours faithfully,
GEORGE W. CRIGHTON.

78, Ward Road,
Dundee,
Angus.
September 2nd, 1956.

International Association of Small-Animal Specialists

Sir,—During a recent meeting of the Permanent Committee of the International Veterinary Congress further discussions took place regarding the formation and subsequent affiliation to the Congress of International Associations of Veterinary Specialists, and although final affiliation necessitates the formation of new statutes and by-laws, everything is being done to organise the specialist groups; although the arrangements made must remain provisional until the XVIth International Veterinary Congress due to take place in 1958.

The main purpose of all the specialist associations is to encourage closer contact and collaboration with colleagues working in the same field. It is expected that they will also take the initiative for organising the scientific programme of their sections at the International Congresses in consultation with the Organising Committee.

It has been suggested that an International Association of Small-Animal Specialists be formed and Mr. S. F. J. Hodgman has been nominated as provisional President while I have been asked to act as provisional Secretary. The organisation of this group is already progressing and the response from countries abroad has been favourable. Several countries already have small-animal organisations in existence whilst others are in the process of formation.

To conform with this scheme the formation of a national group of small-animal specialists in this country is highly desirable and it is hoped that veterinary surgeons who are particularly concerned with small-animal work will co-operate in the formation of such a group, as the opinions and guidance of British veterinarians will be of the utmost value to the success of an international organisation. It is proposed to hold an exploratory meeting, preferably in London, in early autumn, and it will be greatly appreciated if colleagues engaged in small-animal work would indicate their interest in such a meeting by communicating with me as soon as possible.

Yours faithfully,
W. BRIAN SINGLETON.

Canine Research Station,
Kennett,
Nr. Newmarket,
Suffolk.
September 4th, 1956.

Licensing of Dual-Purpose Vehicles

Sir,—With reference to your note on page 560 of THE VETERINARY RECORD (August 18th issue) regarding the licensing of dual-purpose vehicles, I am of the opinion that the matter should be taken further.

So far as I am aware, if a vehicle is taxed at the higher goods rate its speed it limited to 30 m.p.h.—a serious restriction if one is faced with several calving jobs or cases of milk fever at an early hour in the morning. I believe that such a vehicle must, also, by law, have prominently displayed the name, address, and business of the owner; if this is carried out whose wrath is going to be the more severe—the police for breach of the law, or the R.C.V.S. for breach of professional etiquette?

I went into this matter myself some years ago when I bought a van (not being able to see the sense in paying £200 purchase tax for more glass and less space), and I was told by the local licensing authority that dentists, doctors, and veterinary surgeons, carrying only articles used in connexion with their professions, were not liable for the goods tax. No mention was made then as to the size of these articles, but if this is to be considered, what veterinary surgeon in large-animal practice can fit the large medicine bottles or calving instruments, etc., into an attaché or brief case? Not only is a test case necessary therefore,

but in my opinion, if the test case is lost, representations should be made to Parliament to have the legislation amended so that professional men will not be faced with an impossible situation brought about by conflicting regulations.

Yours faithfully,

W. J. TARVER.

39, Beech Grove,
Ashton-on-Ribble,
Preston,
Lancs.
August 30th, 1956.

The New Handbook on Pigs

Sir,—I should like to congratulate the Technical Development Committee on its recent publication, "The Husbandry and Diseases of Pigs." However, I feel it is necessary to take them to task for one statement concerning the feeding of antibiotics.

On page 37 the authors state that "it is probably desirable to use, as dietary additives, antibiotics with a wide range of activity." Their reason for this appears to be based on the assumption that the improved growth rate and feed efficiency following antibiotic supplementation is a direct result of blocking much of the indeterminate illness which slows growth rate. Surely, this is the wrong way round? The antibiotics affect the flora of the gut and through this improve the animal's utilisation of its food. This results in a more profitable animal in a state of positive health and therefore in a better position to resist the effects of pathogenic bacteria. To my knowledge, no claims are made by any antibiotic manufacturer that low or nutritional levels of antibiotic cure bacterial disease.

The Ministry of Agriculture has found it necessary to issue a warning to farmers against "accepting as scientifically proved the claims of rival manufacturers for the superiority of their particular antibiotics." They also say that when conclusive evidence is available they will make a statement concerning relative effectiveness but, for the time being, results prove that there is nothing to choose between them. This is in accordance with the findings of the A.R.C. committee which originally investigated the effects of antibiotics on growth rate.

It is well known that the gut flora contains many bacteria which are useful and, in fact, essential to the animal in producing vitamins in the gut which are ultimately absorbed by the animal or used by other beneficial bacteria. This being so, and accepting the statements of the Ministry and the A.R.C. that penicillin and the tetracyclines are indistinguishable in their effect on growth rate, might it not be unnecessary and possibly even unwise to produce a gross change in the flora of the gut by using an antibiotic with a wide range of activity? In the United States and in this country the use of wide-range antibiotics has occasionally had disastrous effects, and as a result of this, these antibiotics are often given therapeutically in conjunction with vitamins of the B complex in what is termed a "stress fortified" presentation.

Rational veterinary therapy is surely to use a product which deals with the trouble-maker with the least possible interference in the animal's normal state. Antibiotics in the feed can only assist an animal to maintain positive health, and the effects on growth rate vary according to the conditions on the farm where they are employed. In choosing the antibiotic to be used, only two questions really matter. Does it work? And, what does it cost? Penicillin is the cheapest antibiotic in the world, possibly because it is subject to general competition, and its more selective range of activity means that its effects are more specific and more controlled. I am not suggesting that wide-range antibiotics are not valuable as feed supplements. I do suggest that the Technical Development Committee's publication may mislead the reader into thinking that penicillin is less valuable, which certainly is not correct.

Yours faithfully,

G. N. HENDERSON.

Devonshire House,
Piccadilly,
London, W.1.
September 3rd, 1956.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th August, 1956		11	—	36	40	—	30
Corresponding period in	1955	12	1	—	8	—	46
	1954	11	—	—	8	—	58
	1953	7	—	2	32	—	81
1st January to 15th August, 1956		1,074	8	49	428	—	501
Corresponding period in	1955	484	3	6	379	—	1,010
	1954	182	3	12	575	—	1,027
	1953	465	—	28	693	—	2,034